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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,815

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Jonas Scherble

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EXAMINER

LENIHAN, JEFFREY S

ART UNIT

PAPER NUMBER

1765

NOTIFICATION DATE

DELIVERY MODE

09/15/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/577,815	<b>Applicant(s)</b> SCHERBLE ET AL.	
	<b>Examiner</b> Jeffrey Lenihan	<b>Art Unit</b> 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2011.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-13 and 22-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-13 and 22-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This Office Action is responsive to the amendment filed on 6/29/2011.
2. The objections and rejections not addressed below are deemed withdrawn.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

### ***Claim Rejections - 35 USC § 112***

4. Claims 22-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Regarding claims 22, 24, and 26: The instant claims require that the claimed foam is characterized by an extremely fine pore size/structure; however, no standard is provided in the specification to define the limitation "extremely fine." As this is a relative term, one of ordinary skill would not know what size/structure is required to meet the claimed limitation of an extremely fine pore structure.
6. Regarding claims 23, 25, and 27: The polymer foams of the parent claims are polymer compositions that will comprise a variety of polymer chains having different chain lengths and, as a result, different molecular weights. It is unclear whether the weight recited in the instant claims is intended to refer to the composition's weight average molecular weight, number average molecular weight, etc.

***Claim Rejections - 35 USC § 103***

7. Claims 1, 3, 5, 7, 8, 13, 20, and 21, 22, 24, 26, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geyer et al, US5928459, in view of Tada et al, US5225449.

8. The rejection stands as per the reasons outlined in the previous Office Actions, incorporated herein by reference (for claims 1, 3, 5, 7, 8, 13, 20, 21).

9. Regarding the claimed pore structure (for claims 22, 26) and density (for claims 24, 28): A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present; see *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). As discussed in the previous Office Actions, the combination of Geyer and Tada renders obvious a foam made using the same monomers in similar amounts as the claimed invention; it is therefore reasonably expected that the properties of the prior art article would necessarily be the same as claimed and inherently be not materially different from those of the claimed invention. The burden is therefore shifted to applicant to provide evidence demonstrating an unobvious difference between the claimed invention and the prior art.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Geyer et al, US5928459, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Stein et al, WO 03/020804.

The rejection stands as per the reasons outlined in the previous Office Actions, incorporated herein by reference.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Geyer et al, US5928459, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Wu et al, US6396451.

The rejection stands as per the reasons outlined in the previous Office Actions, incorporated herein by reference.

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Geyer et al, US5928459, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Zacharopoulos et al, US2004/0034932.

The rejection stands as per the reasons outlined in the previous Office Actions, incorporated herein by reference.

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Geyer et al, US5928459, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Nieuwendijk et al, US4847908.

The rejection stands as per the reasons outlined in the previous Office Action, incorporated herein by reference.

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14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Geyer et al, US5928459, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Baumann et al, US2002/0037955.

The rejection stands as per the reasons outlined in the previous Office Action, incorporated herein by reference.

15. Claims 1, 3, 5-8, 13, 20-22, 24, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krieg et al, JP 09-235401, in view of Tada et al, US5225449.

16. Claims 1, 3, 5-8, 13, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krieg et al, US5698605, in view of Tada et al, US5225449.

17. The rejection stands per the reasons outlined in the previous Office Action, incorporated herein by reference (for claims 1, 3, 5-8, 13, 20, and 21).

18. Regarding the claimed pore structure (for claims 22, 26) and density (for claims 24, 28): As discussed in the previous Office Actions, the combination of Krieg and Tada renders obvious a foam made using the same monomers in similar amounts as the claimed invention. Per the rationale outlined in paragraph 9 of this Office Action, it is therefore reasonably expected that the properties of the prior art article would necessarily be the same as claimed and inherently be not materially different from those of the claimed invention. The burden is therefore shifted to applicant to provide evidence demonstrating an unobvious difference between the claimed invention and the prior art.

19. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Krieg et al, JP 09-235401, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Wu et al, US6396451.

The rejection stands per the reasons outlined in the previous Office Action, incorporated herein by reference.

20. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Krieg et al, JP 09-235401, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Zacharopoulos et al, US2004/0034932.

The rejection stands per the reasons outlined in the previous Office Action, incorporated herein by reference.

21. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Krieg et al, JP 09-235401, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Nieuwendijk et al, US4847908.

The rejection stands per the reasons outlined in the previous Office Action, incorporated herein by reference.

22. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Krieg et al, JP 09-235401, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Baumann et al, US2002/0037955.

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The rejection stands per the reasons outlined in the previous Office Action, incorporated herein by reference.

23. Claims 23, 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Krieg et al, JP 09-235401, and Tada et al, US5225449, as applied to claims 1, 3, 5-8, 13, 20-22, 24, 26, and 28 above, and further in view of Stein et al, WO2003/072647. The examiner notes that Stein, US2005/0090568, has been utilized herein as an equivalent English translation of WO2003/072647.

24. Krieg is silent regarding the production of a foam having the claimed molecular weight.

25. Stein teaches that polymethacrylimide foams (abstract) having weight average molecular weight (Mw) greater than  $10^6$  g/mol (§0045) have physical/mechanical properties suitable for use in aircraft construction (§0069).

26. Krieg (Column 1, lines 65-67) and Stein are both directed towards the production of polymethacrylimide foams that are suitable for use in aircraft construction. Barring a showing of factual evidence demonstrating unexpected results, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the foam of Krieg by varying the Mw over  $10^6$  g/mol (for claims 23, 25, 27) to obtain a final product having properties suitable for use in aircraft construction.



***Response to Arguments***

27. Applicant's arguments filed 6/29/2011 and the Rule 1.132 declaration filed 7/18/2011 have been fully considered but they are not persuasive.

28. Applicant's argument that Geyer is not directed towards improving the size/shape of pores was addressed in paragraph 42 of the previous Office Action.

29. Applicant's argument that the use of magnesium oxide was addressed in paragraph 43 of the previous Office Action. Applicant has not provided any evidence to contradict the explicit teaching in Geyer that magnesium oxide is dissolved in the prior art monomer mixture; applicant therefore has not demonstrated that the prior art composition is required to contain an insoluble nucleating agent.

30. Regarding the argument that Tada is only directed towards the production of foams having large pores: Table 1 of Tada discloses examples of foams comprising 50, 30, 20, 10, etc. parts TBMA. As disclosed in the table, foams comprising the larger amounts of TBMA (for example, 50) are described as having large pore structure. In contrast, foams containing smaller amounts of TBMA are described as having a fine structure. Tada therefore teaches that decreasing TBMA content results in a fine pore structure.

31. Regarding the allegedly unexpected results: The data provided in the specification and the Rule 1.132 declaration does not demonstrate the criticality of the claimed range of 0.01 to 4.99 parts t-butyl methacrylate (TBMA). It has been held that "a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including non-preferred embodiments," *Merck & Co. v.*

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*Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.). "Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or non-preferred embodiments," *In re Susi* 440 F.2d 442, 169 USPQ 423 (CCPA 1971). (MPEP § 2123 [R-5]). As noted in previous Office Actions, Geyer explicitly states that the foam of US5928459 may contain up to 20% by weight of an ester of (meth)acrylic acid and a C1-C4 alcohol; TBMA is an ester of methacrylic acid and a C4 alcohol. As acknowledged by applicant in the submitted remarks (see page 9, lines 2-3 and 12-13), Tada teaches the use of as little as 5 parts TBMA as a comonomer in methacrylimide foams.

32. Comparative Example A1 in the declaration discloses a composition comprising 10 parts TBMA; the inventive examples in the declaration comprise either 1 (sample B1) or 2 (sample B2) parts TBMA. The comparative example therefore contains more than double the claimed upper limit of 4.99 parts TBMA content, whereas the inventive examples contain less than half the claimed limit. As discussed above, the prior art renders obvious the use of less than 10 parts TBMA in methacrylimide foams. The provided data therefore does not demonstrate the criticality of the claimed upper limit of 4.99 parts TBMA for the allegedly unexpected results.

33. Similarly, Table 4 in the specification compares an inventive example comprising 1 part TBMA (Example 2) to compositions comprising 10 (Example 6) or 20 parts TBMA (example 7); the amount of TBMA in the comparative examples therefore is at least 10 times greater than the amount of TBMA in the inventive example. The data provided in

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the specification does not demonstrate the criticality of the claimed range of 0.01 to 4.99 parts TBMA versus the prior art.

34. Regarding the combination of Krieg and Tada: As noted in the previous Office Action, Krieg explicitly teaches that the prior art methacrylimide foam may contain up to 30% by weight of a methacrylic ester of a C1-C4 alcohol; the combination of Krieg and Tada therefore renders obvious the production of a foam comprising less than 10 parts TBMA. Per the same rationale applied to the combination of Geyer and Tada, the provided data therefore does not demonstrate the criticality of the claimed range for TBMA content compared to the prior art.

### ***Conclusion***

35. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Lenihan whose telephone number is (571)270-5452. The examiner can normally be reached on Monday through Thursday from 7:30-5:00 PM, and on alternate Fridays from 7:30-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Irina S Zemel/  
Primary Examiner, Art Unit 1765

/Jeffrey Lenihan/  
Examiner, Art Unit 1765

/JL/